

REMARKS

35 U.S.C. §103

Claims 22 to 44 are rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Newsome (4,457,960) in view of Lai et al. (5,272,236).

It is the Examiner's position based on the Newsome and Lai references that it would have been obvious to one skilled in the art to substitute the polymer described in Lai in the film structure described in Newsome. A complete discussion of the Examiner's arguments can be found in paper 48.

Newsome discloses a linear low density polyethylene in multiple layer, molecularly oriented films. Newsome further discloses linear low density polyethylene blended with ethylene vinyl acetate copolymers. These blends (linear low density polyethylene and ethylene vinyl acetate copolymers) are also disclosed as being useful in conjunction with a barrier layer wherein ethylene vinyl alcohol copolymer is exemplified as a barrier resin. Newsome, however, discloses a linear low density polyethylene which is chemically and physically distinct from the linear low density polyethylene taught in Applicants' claims. In fact, the linear low density polyethylenes described and taught in Newsome are produced by a process which gives polyethylenes which are vastly different from the polyethylenes produced by the single site catalyst technology described in Lai. The polyethylenes of Newsome have a wide molecular weight range and therefore wide melting point ranges. The polyethylenes of Lai are extremely uniform in composition and molecular weight. Therefore, melting point ranges are quite narrow. Furthermore, Newsome does not teach or suggest that any other linear low density polyethylene could be used, let alone the linear low density polyethylene of Applicants' claims.

Lai, however, discloses a class of linear olefin polymers having certain characteristics and improvements over conventional LLDPE such as the LLDPE taught by Newsome.

Lai further discloses a process of manufacturing said linear olefin polymers. Lai also discloses that these polymers are useful in a variety of areas such as fibers, films and molded parts. There is, however, no teaching or suggestion by Lai in a specific type of film structure (i.e., barrier films, non-barrier film, blended, non-blended film) how these polymers would react or even how they could be useful within the context of any specific film structures. In addition, there is certainly no teaching in Lai or Newsome to combine the teachings to make the claimed invention.

The design of specific film structures involves the consideration of many factors. These factors can be exemplified by, but not limited to, processability of the individual layers or the entire film structure, hot tack, heat sealability, coefficient of friction, etc.

Lai neither teaches nor suggests how any of these factors would be addressed with the use of Lai's polymer within the context of any specific film, structure, or class of film structure, let alone Applicants' specific film structure.

A disclosure of a monolayer film structure comprising solely the polymer of Lai does not address the factors discussed above. Because these factors change with the introduction of another resin (i.e., ethylene vinyl acetate copolymer) or with the introduction of a barrier layer (ethylene vinyl alcohol copolymer) in a film structure, there is no way of predicting whether the film structure having more than one component will be viable based on the knowledge derived from the Lai disclosure.

"Polymers and copolymers made by polymerization with a single site or metallocene catalysts are often known as homogeneous polymers because they have very homogeneous structures and narrow molecular weight distributions. On the other hand, polymers such as linear low density polyethylene (LLDPE) made with Ziegler-Natta (ZN) catalysts have non-uniform or heterogeneous structures and broader molecular weight distributions. This causes significant differences between the thermal, physical and processing properties of the two types of materials.

For example, homogeneous polymers made with single site catalysts (SSC) have lower melting points and are stronger and tougher than comparable polymers made with ZN catalysts. This makes the SSC materials ideally suited for use in film applications requiring high strength and strong heat seals. However, the homogeneous nature and the narrow molecular weight distribution of the SSC materials makes them more difficult to process by melt extrusion during multilayer film manufacturing and film orientation by the double bubble process.

In pursuing this invention the inventors had to determine by experimentation that the materials with a molecular weight distribution (Mw/Mn) of 2.5 were processable for the current intended use. It was determined that materials with the claimed I_{10}/I_2 ratio could be successfully extruded and formed into the claimed film structure.

During the double bubble orientation process, SSC materials with narrow molecular weight distributions are difficult to draw down to obtain the desired level of orientation and free shrink.

The material can fracture and the bubble will break to stop the process during orientation. Again, the inventors were required to determine by experimentation that the claimed film structures made with the claimed materials were, in fact orientable in the double bubble process employed to manufacture the film."

Therefore, it is Applicants' position that the design of a viable film structure involves the consideration of many factors as indicated above. Without experimentation, there would be no way of predicting how any of the various factors, either singularly or in combination, could be affected by a change in a component of the film structure (i.e., substituting one LLDPE for another LLDPE). Therefore, given the chemical and physical differences between the LLDPE in Newsome and the LLDPE of Applicants' film structure, the lack of teaching or suggestion in Lai as to how its polymer would affect the various considerations discussed earlier for specific film structures or even in a class of specific film structure (i.e., barrier film, blended films, etc.) and the unpredictability as to the effect of altering the components of a specific film structure, it is not seen how these references either singularly or in combination can obviate the pending claims.

The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.

Newsome discloses film structures having a barrier layer wherein on either surface of the barrier layer pairs of layers are attached. These pairs of layers comprise various percentages of EVA and LLDPE. Newsome does not teach or suggest that any layer be 100% LLDPE. In fact, Newsome teaches that layers adjacent the barrier layer cannot have 100% LLDPE because of manufacturing difficulties.

Lai discloses a class of linear olefin polymers having certain characteristics and improvements. Lai further discloses that this class of olefin polymers can be used in variety of ways including films. There is, however, no teaching or suggestion as how to use this class of polymer in any multiple layer film structure.

Therefore, based on the teachings of each cited reference and on the remarks regarding the difficulties associated with processing a single site LLDPE and the chemical and physical differences between LLDPE and single site LLDPE, Applicants respectfully submit that no motivation or desirability exist in any prior art of record to make the combination made by the Examiner to support the obviousness rejection.

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Claims 22-44 are rejected by the Examiner under 35 U.S.C. §103(a) as being unpatentable over Newsome (4,457,960) in view of Schut "Enter a New Generation of Polyolefins" Nov. 1991, Plastics Technology, or Van der Sanden "A New Family of Linear Ethylene Polymers With Enhanced Sealing Performance" February 1992.

The Newsome reference has been discussed above.

The Schut reference discloses polyethylenes made using different single-site catalysts. The Schut reference further discloses that these polyethylenes, depending on the process and single-site catalyst used can produce, polyethylenes having usefulness in many different applications (such as cast films, and wire/cable coatings). The Schut reference does not, however, teach or suggest any specific film structures or any generally film structures such as barrier versus non-barrier type film structures or how any specific resin which is produced using a single-site catalyst might behave in any given film structure.

The Van der Sanden reference discloses linear ethylene polymers having lower seal initiation temperatures, toughness and strength. Therefore, the reference only discloses properties of particular linear ethylene polymers without any teaching or suggestion as to how these particular properties would perform or be utilized in an environment of other resins. The fact that a particular resin has improved properties does not of itself mean that these properties could not be compromised by the presence of other resins, cross-linking or any other factors which are involved in the design of film structures.

In considering obviousness, the critical inquiry is whether something in the art as a whole suggests the desirability, and thus the obviousness, of making a combination. *In re Newell*, 891 F.2d 899, 901-02, 13 USPQ 2d 1248, 1250 (Fed. Cir. 1989).

Applicants' respectfully submit that none of Newsome or Newsome in view of Lai, or Newsome in view of Schut, or Van der Sanden suggest the desirability of combination that would yield Applicants' invention. Also, no other reference has been submitted that would teach or suggest the combination of references relied upon the Examiner to arrive at Applicants' invention.

Double Patenting

Claims 22-24 are provisionally rejected by the Examiner under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 17, 18, 20 and 21 over copending Application No. 09/369,978.

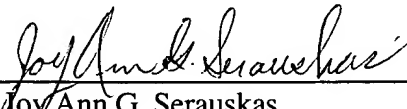
In view of the fact that neither the conflicting claims (17, 18, 20 and 21 of copending Application No. 09/369,978) nor the pending claims have been allowed, Applicants respectfully submit that the double patenting rejection is premature. Applicants would be willing to reconsider this rejection if and when any of the claims are indicated as allowable.

In closing, Applicant respectfully submits that in view of the above remarks and amendments, that all the claims should now be in condition for allowance.

Respectfully submitted,

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By: _____


Joy Ann G. Serauskas

Registration No. 27,952
McDERMOTT, WILL & EMERY
227 West Monroe Street
Chicago, IL 60606-9815
312-372-2000